MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2015/2016

PSP 0101 – PROBLEM SOLVING AND PROGRAM DESIGN

(Foundation in Information Technology)

15 OCTOBER 2015
2.30 p.m – 4.30 p.m
(2 Hours)

INSTRUCTIONS TO STUDENT

1. This question paper consists of **THREE** pages excluding the cover page.
2. Answer **ALL** questions.
3. Write your answers in the Answer Booklet.

Instructions: Answer **ALL** questions. Write your answers in the Answer Booklet.

QUESTION 1 [25 Marks]

a. In the following problems, determine whether the algorithmic or the heuristic solution is the best solution approach for each of the problem. Justify your answer.
   i. To fill a glass with water
   ii. To find the total of three numbers
   iii. To choose which movie to watch
   iv. To blow up a rubber balloon

(6 marks)

b. Programming languages are divided into two basic types which are low-level language and high-level language.
   i. List **TWO (2)** programming languages that are classified as a low-level language.

(2 marks)

   ii. Explain **TWO (2)** characteristics for each of these languages.

(4 marks)

c. List and explain **FOUR (4)** conversion strategies that have been used in the implementation phase in system development life cycle (SDLC).

(8 marks)

d. Which of the following are valid variable names? If it is not a valid variable name, state why.
   i. time@Day = "Tuesday"
   ii. Game board = 3
   iii. myFirstCounter = 1
   iv. 6months = "yes"
   v. while = "true"

(5 marks)

QUESTION 2 [25 Marks]

a. Using proper variable names and computer operator, set up an equation to calculate the number of seconds left until examination end, when given as an input is the number of minutes left until examination end.

(4 marks)

b. Create an IPO chart for a program that determines how many full 250-strawberry containers of strawberry a gardener can pack when given as an input is the number of strawberry he has collected on a given day. Use the suitable variable names.

(6 marks)

c. Draw a flowchart to support your answer in Question 2 (b).

(6 marks)

Continued...

d. Write a complete pseudocode using negative logic structure for a program to determine the athlete's category for the standing long jump when the given input is the distance in centimeter with reference to the information in **Table 1** below:

Category	Distance in meter
Excellent	> 1.91
Average	1.91 – 1.62
Below average	< 1.62

Table 1

(9 marks)

QUESTION 3 [25 Marks]

a. Briefly describe these decision logic structures.
   i. Straight-through logic
   ii. Positive logic
   iii. Negative logic

(3 marks)

b. Adrian wants to write a program that enables him to key in fifty (50) numbers and print out the biggest number. Write the pseudocode for this program using the While loop structure.

(6 marks)

c. Draw a corresponding flowchart for the program in Question 3(b).

(8 marks)

d. City Mall charges its customers for parking their cars inside the car park building. The parking rates are set as $4 for the first 2 hours, $3 for the next 2 hours, and $1 per hour for every subsequent hour afterwards. Draw a flowchart using the positive logic structure for the calculation of any car's parking fee.

(8 marks)

Continued...

QUESTION 4 [25 Marks]

a. In World of Warcraft (WoW) game, you can buy weapons to improve your odds against other players. Draw a flowchart for a program that will ask 12 players to enter their WoW character names and allow them to enter the item code that they want to purchase (refer to **Table 2**). The program will then display the player's WoW character name together with the name of the item that has been selected. (Use the automatic counter loop to load and print the array. Use straight through logic decision structure)

Item Code	Item Name
OHDW	One-Handed Weapons
THDW	Two-Handed Weapons
SOFF	Shields and Off-Hand Items

Table 2

(13 marks)

b. Briefly describe the following term:
   i. Local variables
   ii. Global variables
   iii. Parameters

(3 marks)

c. Write a pseudocode for a function definition that will ask the user to enter the values of 2 angles of a triangle and another function definition to calculate and display the value of the other angle of that triangle.

(9 marks)

End of Paper